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ABSTRACT

Some research on attribution processes has suggested that attributional search is exploratory behavior that serves adaptation and mastery motives. This study was conducted to investigate attributional search in reactions to success and failure after quitting smoking, to look for antecedents of attributional search other than expectancy and outcome, and to identify subjects' concerns about future outcomes. Sixty-one persons were telephoned 1.5 to 2 years after they had completed smoking cessation treatment and were asked to list the questions they asked themselves about the fact that they had quit smoking or continued to smoke. Number of attribution questions served as an index of attributional search and number of prediction questions was a marker for concern about the future. As predicted, smokers who had relapsed after a period of abstinence asked the most attribution questions and ex-smokers who slipped but returned to abstinence asked the most prediction questions. These results are consistent with previous demonstrations that attributional search is stimulated by unexpected and negative events and that concern about the future follows unexpected success. Regression analyses showed that a more extensive attributional search was associated with smoking outcome, occurrence of a slip, and lighter smoking habit before treatment, and that higher concern about the future was connected with shorter duration of habitual smoking. (Author/NB)

Attributional Search and Concern About the Future Following Smoking Cessation Treatment

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RUNNING HEAD: Attributional Search

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Abstract

We telephoned people 1 1/2 to 2 years after they had completed smoking cessation treatment and asked them to list the questions they asked themselves about the fact that they had quit smoking or continued to smoke. Number of attribution questions served as an index of attributional search and number of prediction questions was a marker for concern about the future. As predicted, smokers who had relapsed after a period of abstinence asked the most attribution questions and ex-smokers who slipped but returned to abstinence asked the most prediction questions. These results are consistent with previous demonstrations that attributional search is stimulated by unexpected and negative events and that concern about the future follows unexpected success. Regression analyses showed that (a) a more extensive attributional search was associated with smoking outcome, occurrence of a slip, and lighter smoking habit before treatment, and (b) higher concern about the future was connected with shorter duration of habitual smoking.

Attributional Search and Concern About the Future Following Smoking Cessation Treatment

In the 1970s, experimental investigations of attribution processes dominated the social psychological literature but left unanswered the question of whether people ever thought about causes when they hadn't been asked to do so. By the mid-1980s, however, Weiner (1985) was able to conclude that people spontaneously look for causal explanations when they encounter unexpected events and fail to attain a goal. He suggested that attributional search is exploratory behavior that serves adaptation and mastery motives and recommended that future research identify antecedents of attributional search other than expectancy and outcome.

Our study had three purposes. First, we wanted to investigate attributional search in a new area: reactions to success and failure after quitting smoking. To do this, we telephoned people 18 to 24 months after they completed smoking cessation treatment and asked them to report the questions they ask themselves when they think about the outcome of their attempt to quit. Previous research (Schoeneman, van Uchelen, Stonebrink &

Cheek, 1986; Wong & Weiner, 1981) has used the number of attribution questions produced by subjects as an index of causal search. We expected that (a) people who failed to quit smoking would ask more attribution questions than those who succeeded, and (b) causal search would be most extensive for smokers who maintained abstinence for a period of time before relapsing: Their ultimate failure to quit should be more unexpected and distressing than that of smokers who never quit.

A second aim was to look for antecedents of attributional search other than expectancy and outcome. Weiner (1985) suggested that important events might stimulate causal search and Schoeneman et al. (1986) found that less prior experience with an outcome was associated with more attribution questions. Before treatment, we asked a number of questions about smoking attitudes and history that corresponded to the experience and importance variables.

Our final goal involved subjects' concerns about future outcomes. In our previous research (Schoeneman, van Uchelen, Stonebrink, Gould, Mintz & Strazza, 1984; Schoeneman, van Uchelen, Stonebrink & Cheek, 1986), we found that questions about what will happen in the future were the most

prevalent type of non-attributional question. Unpublished analyses from these studies indicated marginally significant tendencies for prediction questions to occur mostly after unexpected success. If this is a reliable effect, then we expected those who had a "close call" (i.e., those who lapsed but returned to abstinence) to ask the most prediction questions.

Method

Subjects

Our subject pool consisted of 80 people from the Portland, Oregon metropolitan area who had completed the Kaiser-Permanente Freedom From Cigarettes (FFC) program[1] in 1982 and 1983. We were able to contact 68 (85%) by telephone 1 1/2 to 2 years after the end of treatment. Seven refused our interview, leaving 61 (76%) in the sample. At the beginning of treatment, subjects were smoking an average of 29 cigarettes per day; their age ranged from 25 to 70 years, with an average of 47.7; and they had first started smoking from 4 to 54 years prior to treatment (M = 29.3).

The first interview questions assigned respondents to one of four groups. Abstinent subjects (n = 23) reported that they had not smoked at all since the end of FFC. Never Abstinent smokers (n = 15) either never quit or

relapsed within two weeks of the end of treatment. Slip-Relapse subjects (n = 17) had two or more weeks of post-treatment abstinence but were smoking at the time of the interview. Finally, Slip-Abstinent participants (n = 6) had two or more weeks of abstinence after treatment, had smoked, and had returned to abstinence at least one month prior to the interview.[2]

An n of six in the Slip-Abstinent group was insufficient for reliable analysis, so we supplemented these subjects with nine graduates of a different FFC series (Stevens & Hollis, 1985) who fit the Slip-Abstinent criteria. These nine had completed smoking cessation treatment that was essentially the same as that of the original subjects, had experienced a slip sometime during the first year post-treatment, and were abstinent at a one-year follow-up (verified by salivary cotinine levels). As with our main subject group, the interview occurred during the second year following treatment. In the Slip-Relapse group, data from one subject were missing because a page was omitted from an interview questionnaire. Thus, the final count for our four groups was 23 Abstinent, 15 Never Abstinent, 16 Slip-Relapse, and 15 Slip-Abstinent.

Procedure and Materials

Pre-treatment questionnaire. Before starting FFC, participants answered a questionnaire about their current age; age at start of habitual smoking; number of cigarettes, pipes and cigars smoked per day; number of times abstinent for more than one day; and duration of longest abstinence since starting habitual smoking. We also asked how upset they would be if they should smoke a cigarette in the future and how important they would consider such a lapse to be.

Telephone interview. The fourth and fifth authors served as telephone interviewers. They participated in the construction of the interview and completed training that included observed pilot trials on other students, the co-authors and FFC graduates who were not a part of this study. Interviews lasted 15 to 30 minutes and included questions about current smoking or nonsmoking status; characteristics of initial lapse after treatment (if any); attributions and emotions for initial lapse (if any); the item designed to elicit questions about causes and the future; attributions and emotions for current smoking or nonsmoking status; and likelihood of smoking in the next three months.[3]

The following item assessed causal search and concern about the future: "People sometimes ask themselves questions about the fact that they have quit smoking (continue to smoke). Please tell me all the questions you ask yourself when you think about the fact that you no longer smoke (continue to smoke). If you don't ask yourself any questions, that's OK."

The first author sorted questions into four categories (Schoeneman, van Uchelen et al., 1984, 1986; Wong & Weiner, 1981). Attribution questions ask about the cause of an event (e.g., "Why do I smoke?", "Why didn't I get help sooner?"). Prediction questions wonder about what will happen following an event ("Am I going to quit?", "Will I ever go back?"). Action questions inquire about how one should respond after an event ("Whether I want to start again") and re-evaluation questions concern a reassessment of abilities and goals ("Is it really worth it?"). Agreement between the first author and a second rater was good (85 to 90%) in previous reports and their pilot studies (Schoeneman, van Uchelen et al., 1984, 1986); given this, we deemed it acceptable to use a single, experienced rater in this study.

Results[4]

One-way ANOVAs showed that the four groups did not differ on any of

the variables assessed before treatment. Overall, participants asked an average of 0.9 questions about their current smoking or nonsmoking status: Of these, 0.7 (82%) were attribution questions and 0.1 (11%) were prediction questions.[5] The remainder were split evenly between action and re-evaluation questions (3% each), which are not considered further.

Attributional Search

We predicted that smokers, especially those in the Slip-Relapse group, would show the most extensive attributional search. Smokers (Never Abstinent and Slip-Relapse subjects) asked an average of 1.3 attribution questions, compared to 0.3 for nonsmokers (Abstinent and Slip-Abstinent subjects), $t(67) = -4.64$, $p < .001$. A one-way ANOVA comparing all four groups was highly significant, $F(3,65) = 11.01$, $p < .0001$ (see Figure 1). A Newman-Keuls probe showed that Slip-Relapse participants asked significantly more attribution questions ($M = 1.7$) than those who were Never Abstinent ($M = 0.8$), Slip-Abstinent ($M = 0.3$) or Abstinent ($M = 0.3$); the latter three groups did not differ from each other.

Insert Figure 1 about here

None of the pre-treatment measures, including upset about and importance of possible lapses, was significantly correlated with number of attribution questions. A forward stepwise regression analysis that used subjects' smoking status (Nonsmoking = 1, Smoking = 2), presence of slip or not (Slip-Abstinent and Slip-Relapse = 1, Abstinent and Never Abstinent = 2), and pre-treatment variables to predict attribution questions revealed that the best equation included smoking status (standardized β = .59), slip status (β = -.31), and number of cigarettes smoked daily before treatment (β = -.21) as predictors, multiple R = .633, R^2 = .400.

Concern About the Future

Our prior research suggested that Slip-Abstinent subjects would show the greatest concern about future outcomes. Smokers and nonsmokers did not differ in the number of prediction questions they asked. A comparison of all four subject groups revealed that Slip-Abstinent subjects wondered more about the future (M = 0.3) than Never Abstinent (M = 0.1), Slip-Relapse (M = 0.1) and Abstinent (M = 0.0) subjects, $F(3,65) = 3.27$, $p < .03$.

A greater number of prediction questions was associated with a shorter span between age at start of smoking and age at beginning of

treatment, $r(69) = -.29$, $p < .02$. This variable was also the best predictor of prediction questions in a forward stepwise regression analysis that included smoking status, slip status, and all pre-treatment variables, $\beta = -.93$, multiple $R = .275$, $R^2 = .076$.

Discussion

Previous studies have shown that attributional search is stimulated by outcomes that are unexpected and negative (Weiner, 1985), and our findings are consistent with this picture: Subjects who were smoking 1 1/2 to 2 years after the end of treatment asked more questions about the causes of their current status than did subjects who were abstinent. This was especially true of those who had had a period of abstinence prior to return to habitual smoking.[6] Our finding that Slip-Relapse subjects asked more questions than those who were Never Abstinent suggests that relapse was perceived as more unexpected or as a larger setback than never having quit. Marlatt's (1985) model of addictive relapse suggests that as abstinence lengthens, confidence in the outcome increases; this confidence is often shattered when high-risk situations undermine abstinence because failing to cope with a high risk situation decreases self-efficacy. Although Never

Abstinent and Slip-Relapse smokers both failed to quit smoking, the latter may have experienced a greater violation of their success expectancies and consequently expended more effort trying to figure out what went wrong.

Note that most of the smokers in the Slip-Relapse group were still asking attribution questions over a year following relapse. The causal search of these subjects is also reflected in their attributions for their lapse (Schoeneman, Hollis et al., 1987): Slip-Relapse smokers engaged in behavioral self-blame (strategy and effort attributions), characterological self-blame (ability and personality attributions) and external ascriptions for their first cigarette after treatment, but Slip-Abstinent subjects engaged in behavioral self-blame only. This ongoing attributional activity suggests that these smokers are still trying to understand and assess the possibilities of controlling their negative outcome (Forsyth, 1980; Taylor, 1983). It is not clear whether the fact that they are still doing this so long after the event is prognostically favorable or not.

The regression analysis showed that a lighter smoking habit before treatment was a predictor of causal search. It is possible that heavy smokers had a readily available attribution for their outcome (e.g., "I was

strongly addicted to cigarettes and still am") and didn't need to mount an attributional search.

Extent of prior experience with and importance of outcomes are also supposed to be stimuli to attributional search (Schoeneman, van Uchelen, et al., 1986; Weiner, 1985). However, pre-treatment measures that assessed duration of prior smoking and importance of possible post-treatment lapses did not predict attributional search. In retrospect, these measures may have been too indirect; it might have been better to ask subjects about their experience with and the importance of quitting smoking.

As expected, concern about the future, as indexed by prediction questions, was for the most part restricted to Slip-Abstinent subjects; this made them analogous to subjects who experienced unexpected successes in previous studies (Schoeneman, van Uchelen et al., 1984, 1986). It makes sense that people should wonder if unexpected outcomes will be repeated in the future, but why should this apply mostly to successes? Perhaps those who suffer unexpected reverses are more concerned with making sense of their problems through attributional search, while their successful counterparts are freer to consider whether the outcome was "real."

Correlational and regression analyses indicated that a shorter history of habitual smoking was associated with greater concern about future outcomes. The converse, that "old hands" ask fewer prediction questions, leads us to wonder if they believed success at quitting smoking to be transitory or unlikely, while newer smokers were more optimistic.

A fascinating set of questions for future research involves changes in attributional search and concern about the future over time. For instance, did Abstinent and Never Abstinent subjects ask more attribution and prediction questions closer in time to treatment's end? Is the causal search of Slip-Relapse subjects decreasing, increasing, or holding steady? When will the Slip-Abstinent group stop wondering about future outcomes? A "natural history" of attributional and predictive activity would be theoretically interesting in itself, but it might also have clinical implications: Changing cognitions about causes and the future may be significant markers and milestones in the ongoing process of quitting addictions.

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Footnotes

[1]Freedom From Cigarettes is a group treatment that teaches behavioral and cognitive strategies for dealing with urges to smoke and life stresses. After an orientation meeting, participants quit "cold turkey" and attend four daily two-hour meetings during physical withdrawal, followed by three weekly sessions. Instruction includes stimulus control, self-control, deep muscle relaxation, rational restructuring, assertiveness, and mildly aversive techniques.

[2]If we assume that the seven people who refused the interview and the 12 that we could not contact are all smokers, then 29/80 or 36.2% of the FFC participants reported abstinence from smoking 18 to 24 months after treatment. Omitting those who could not be contacted gives an abstinence rate of 42.6%. These are at the high end of the range of abstinence rates usually found for smoking cessation treatment (Hunt, Barnett & Branch, 1971; Marlatt, 1985). Note that we have no independent verification (e.g., informants' reports, thiocyanate levels) of reported smoking status. However, we think it unlikely that self-reported smokers were misrepresenting their status; furthermore, the abstinence rates in this

study are very similar to verified abstinence rates from other FFC groups. In a different sample of FFC graduates, we found 98% congruence between a salivary cotinine measure and self-reported smoking status.

[3]Findings concerning initial lapses, likelihood of future smoking, and attributions and emotions for current smoking or nonsmoking are described elsewhere (Schoeneman, Hollis, Stevens, Fischer & Cheek, 1987; Schoeneman, Stevens, Hollis, Cheek & Fischer, 1987).

[4]All tests of significance are two-tailed. Note that ns and dfs may vary because subjects occasionally used the option to answer "I don't know."

[5]Of our 69 subjects, 27 (39%) asked no questions. The breakdown by group is as follows: 14 of 23 Abstinent (61%), 7 of 15 Slip-Abstinent (47%), 4 of 16 Slip-Relapse (25%), and 2 of 15 Never Abstinent (13%).

[6]Slip-Relapse participants had their first cigarette an average of 116 days (almost four months) after the end of treatment.

Figure 1

Number of Attribution Questions Asked by Abstinent, Slip-Abstinent, Never Abstinent, and Slip-Relapse Subjects